DRAFT

MEMORANDUM

TO: State Clearinghouse Committee
State of Delaware

FROM: J. Brett Taylor
Legislative and Financial Policy Advisor

DATE: May 11, 2009

RE: **Submission for the Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) Program, Federal Transit Administration**

The Delaware Department of Transportation (DelDOT) is pleased to request State Clearinghouse approval for the submission of a grant application to the Federal Transit Administration under the American Recovery and Reinvestment Act of 2009 (ARRA) TIGGER Program. The proposed project focuses on retrofitting of Delaware Transit Corporation facilities with solar panels, which will generate costs savings through fossil fuel energy reductions.

The solar panels are comprised of photovoltaic cells, composed of ultra-thin layers of silicon. When sunlight strikes the surface of the cell, an electrical field is created resulting in a flow of electricity. Once installed, solar energy is captured by the photovoltaic modules, then converted from direct current (DC) power to alternating current (AC) power, and finally used to power lighting, computers, air conditioning, and other daily electric loads in the building. The systems are arranged normally at a 25-degree angle, increasing the annual electricity output.

The solar panels will be placed at five of DTC's facilities, specifically:

- DTC Administration Building, 119 Lower Beech Street, Wilmington
- Wilmington Operations Center, 1 South Monroe Street, Wilmington
- Wilmington Paratransit Maintenance Facility, 600 West 2nd Street, Wilmington
- Dover Administration and Maintenance Facility, 900 Public Safety Blvd, Dover
- Georgetown Operations Center, South Bedford St & Rt 113, Georgetown

Two major criteria for the evaluation of the grant are the return on investment and a demonstrated reduction in energy consumption as a result of the project. The total cost for the solar panels for the facilities will be $4.5 million. However, this investment will return dividends based on reduction in annual building usage of kilowatt hours of purchased electricity. For instance:

- Wilmington Operations Center – a 90 kilowatt system will produce 110.848 kilowatt hours of power or 12.3% of the buildings annual usage;
- D.T.C. Administration Building, Beech Street, Wilmington – a 91 kilowatt system will produce 112.080 kilowatt hours or 4.1% of the buildings annual usage;
- Dover Administration Building, Dover – a 176 kilowatt system will produce 217.755 kilowatt hours or 20 % of the buildings annual usage;
- Georgetown Operations Building – a 193 kilowatt system will produce 237.708 kilowatt hours or 45.6% of the buildings annual usage.
- Wilmington Maintenance Garage (Paratransit) – a 84 kilowatt system will produce 103.458 kilowatt hours of 48.5 % of the buildings annual usage.

The return on investment of the reduction in energy consumption will be approximately $273,666 per year with a full payback on the system in 15 years.

The environmental benefits of integrating solar power within the facilities are (also see below):

- Annual reduction of approximately 1.1 million pounds in carbon dioxide (CO2);
- The annual equivalent of removing approximately 94 automobiles from our highways;
- The annual equivalent of 3,707 acres of trees

	Energy Output (kWh)	CO2 Savings (pounds)	NOx Savings (pounds)	SO2 Savings (pounds)	SOx Savings (pounds)	# Cars	Trees (1 Acre)
Monthly Avg	64,490.57	89,894.77	185.57	368.74	709.02	7.82	309.06
Annual	773,480.00	1,078,137.20	2,330.44	4,640.88	8,508.28	93.90	3,707.57
25 years	19,337,000.00	26,978,430.00	58,011.00	116,022.00	212,707.00	2,347.48	92,689.26

The solar panels implementation will begin soon after the grant award expected in September 2009.

If you have any questions, please feel free to contact me at 302-760-2492. Thank you.